

## ADDITIONS TO THE JAPANESE LAND SNAIL FAUNA—NO. VII.

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The description of new forms, chiefly supplied by Mr. Y. Hirase, is herein continued. The results of a critical examination of the species of *Euphædusa* and *Pseudonenia* also find place, together with a list of additions and errata to the "Catalogue of Japanese Clausiliidæ," published in these *Proceedings* for 1901.

## Section HEMIPHÆDUSA Btg.

*Group of C. sublunellata.*

*Clausilia pachyspira* n. sp. Pl. XXVII, figs. 5, 6, 7.

Shell club-shaped, the *spire very thick*, the *apex large, obtuse*; thin; yellowish corneous-white; closely and finely striate, the striation not perceptibly coarser on the last whorl. Whorls 8 to  $8\frac{1}{3}$ , moderately convex, the last strongly tapering. Aperture ear-shaped, oblique, rather narrow, extending above in a *large, retracted sinus*. Peristome free and continuous, convex, *very thick*, white, notched at the position of the superior lamella, on the right side of which there is sometimes a low tooth. Superior lamella marginal, vertical, continuous with the spiral lamella, which ascends to a position above the superior lamella. Inferior lamella deeply receding, forming a strong fold within the throat, vertically ascending, thick below, giving off a *branch in the inter-lamellar area, which curves again towards and crosses the inferior lamella* above. Subcolumellar lamella emerging, bounded by grooves. Principal plica arising near the peristome and penetrating past the middle of the right side. Upper palatal plica short, joined in the middle by a narrow, nearly straight, rather weak lunella, which becomes very weak below, but terminates in a small nodule.

Length 13, diam. 3.2 to 3.3 mm.

Clausilium (Pl. XXVII, fig. 7) narrow and parallel-sided, symmetrically tapering to the obtuse apex.

Miyai, Kii. Types No. 83,389, A. N. S. P., from No. 954 of Mr. Hirase's collection.

Very distinct by its thick, club-like shape, peculiar aperture, the curved branch of the inferior lamella, and the palatal structure. It has the pale color and fine sculpture of other members of the group.

*Clausilia kurozuensis* n. sp. Pl. XXVII, figs. 1, 2, 3, 4.

Shell fusiform, moderately tapering to an *unusually thick apex*, very *thin*; white or grayish-white, the specimens being wholly denuded of cuticle; for the same reason, only faint traces of fine striation are discernible on the worn surface. Whorls about 9, but slightly convex, the last tapering, somewhat compressed. Aperture somewhat oblique, piriform, with a well-defined sinulus. Peristome white, continuous, reflexed and much thickened. Superior lamella short, oblique, marginal, continuous with the spiral lamella, which penetrates to the middle of the ventral side. Inferior lamella receding, visible as a strong fold in an oblique view, giving off a branch toward the superior lamella; within it is a high, obliquely ascending plate, thickened below, penetrating inward decidedly deeper than the spiral lamella. Subcolumellar lamella emerging, bounded by grooves, but hardly extending to the lip-edge. Principal plicæ visible in the throat, extending inward to a lateral position, being about one-third of a whorl long. Palatal plicæ four, nearly equal, the upper one less oblique (fig. 4), or the lower two may be quite small and nodule-like (fig. 2).

Length 20, diam. 4.7 mm.

Length 17.6, diam. 4.2 mm.

Clausilium (Pl. XXVII, fig. 3) narrow and parallel-sided, evenly tapering on both sides to the apex, tapering at the filament, but not excised there.

Kurozu, Kii. Types No. 83,390, A. N. S. P., from No. 934 of Mr. Hirase's collection.

By the palatal armature of some specimens this might be placed in the group of *C. validiuscula*; the armature of others comes nearer that of *C. sublnellata*. The pale color and apparently fine striation cause me to place the species in the latter group. The specimens, though they have lost the original surface by erosion, were collected alive. Probably some other locality or station will supply unworn shells, and the color will be found to be pale yellow-

ish or greenish. There is no evidence of coarser striation on the back of the last whorl.

The unusual thickness of the early whorls separates this form from *C. subulina* var. *leucopeas* and *C. sericina* var. *hopalia*. *C. heteroptyx* is a much larger species with different palatal armature. The unusual thinness of the shell also distinguishes *C. kurozuensis*, though this may be partly due to the worn condition of the type specimens.

Section STEREOPLÆDUSA Bttg.

*Clausilia plagiptyx* n. sp. Pl. XXVII, figs. 8, 9, 10.

Shell *solid*, fusiform, much attenuated above, the first two whorls being small and of about equal diameter, giving the shell an awl-like shape; light-brown, the first whorls whitish. Somewhat glossy, closely and finely striate, the striae perceptibly more widely spaced on the last whorl. Whorls  $9\frac{1}{2}$ , moderately convex, the last one somewhat compressed. Aperture rhombic-piriform; peristome reflexed, thickened, white or pale-brownish. Superior lamella marginal, continuous with the spiral lamella, which penetrates to a point above the superior lamella. Inferior lamella approaching the superior, and equally long inside. Subcolumellar lamella emerging to the lip-edge. Principal plica lateral, about a half whorl long. Palatal plicæ four, the upper longest, converging inward toward the principal plica, or parallel with it; the second and third either subequal and short, parallel to the upper plica, or the third plica may be reduced to an elevated point. *Lower plica very obliquely descending*, standing almost as a short, oblique and straight lunella.

Length 17, diam. 4 mm.

Goto, Hizen. Types No. 82,644, A. N. S. P., from No. 817 of Mr. Hirase's collection.

This species is based upon specimens which I listed under *C. brevior* as from "Goto, Uzen."<sup>1</sup> Upon opening specimens I find that the palatal structure differs in a very characteristic manner.

The exterior is almost exactly like *C. brevior*, but it is a less swollen shell than most specimens of that species; but while *C. brevior* has a well-developed lower palatal plica about parallel

<sup>1</sup> These *Proceedings* for 1901, p. 653.

to those above it, in the present species that plica stands obliquely, like a lunella, though not quite near enough to the vertical position to be called a lunella. In *C. addisoni* I have shown a lunella to exist, but in combination with a normally developed lower palatal plica. *C. addisoni* is distinguished externally from *C. plagioptryx* by its stronger rib-striation. *C. plagioptryx* is a more solid shell than either *brevior* or *addisoni*.

The clausilium had fallen out of the two specimens of this species sent by Mr. Hirase.

*C. breviar*, as I stated in a former paper, is not known from south or southwest of middle Hondo. It is a species of the region about Tokyo. At this time we have no *Stereophaedusa* of the *brevior* type in southwestern Hondo, Awaji, Shikoku or northern Kyūshū. *C. addisoni* is found in Higo and Satsuma, in southern, and *C. plagioptryx* in Hizen, in western Kyūshū.

**Clausilia stereoma** var. **hexaptryx** nov.

Shell somewhat larger than *stereoma*, and thinner, much less strong; dark reddish-brown or pale straw-yellow; palatal plicæ six, the upper and lower long, curved, the intermediate ones strong (as in *Megalophaedusa*), though more or less unequal.

Length 24.4, diam. 7 mm.

Length 24, diam. 7.1 mm.

Length 22.2, diam. 6.8 mm.

Length 23, diam. 6.5 mm.

Yaku-jima, Osumi. Types No. 83,302, A. N. S. P., from No. 670a of Mr. Hirase's collection.

Differs from the forms of *stereoma* already known by its strong Megalophaedusoid palatal folds. The clausilium is like that of *C. stereoma*. To what extent the forms of *stereoma* intergrade remains to be determined.

**Clausilia oostoma** Möllendorff. Pl. XXVII, figs. 15, 16, 17, 18.

*C. oostoma* Mlldff., Journ. Asiat. Soc. Bengal, LI, pt. 2, p. 4, Pl. I, fig. 2 (1882). Pilsbry, Proc. Acad. Nat. Sci. Phila., 1900, p. 667.

*C. japonica* var. *suruga* Pils., Proc. Acad. Nat. Sci. Phila., 1900, p. 447, Pl. 14, fig. 4.

*C. eurystoma* var. *brachyptychia* Mlldff., Nachrichtsbl. d. d. malak. Ges., 1901, p. 41.

Shell rather solid, club-shaped, the upper three-fifths of the length tapering and somewhat attenuated, the outlines gently concave above; apex rather large; white under a yellow cuticle.

Surface glossy, densely striate, more or less worn above. Whorls  $11\frac{1}{2}$  to 12, somewhat convex, the penultimate widest, convex, the last whorl flattened laterally, convex below. Aperture piriform, whitish within. Peristome thickened within and reflexed, white, very shortly free, and usually a trifle notched over the superior lamella. Superior lamella oblique and submarginal, continuous with the spiral lamella, which penetrates to the middle of the ventral side. Inferior lamella forming a conspicuous, subhorizontal fold in the aperture, approaching the superior lamella, ascending within with a broad spiral trend, and penetrating deeper than the spiral lamella. Subcolumellar lamella emerging but not reaching the lip-edge. Principal plica short, arising about the middle of the dorsal side and extending past the middle of the right side, scarcely or not deeper than the inner end of the upper palatal plica. Palatal plicæ two or one, the upper plica strong, converging inward to the principal plica, the *lower plica weak and low or wanting*.

Length 26, diam. 5.8 mm.

Length 25, diam. 5 mm.

Clausilium (Pl. XXVII, figs. 15, 16) broad below the middle, the distal fourth abruptly curved, nearly at a right angle with the middle portion, tapering to a rather acute, thickened apex, the palatal margin straight near the apex, and a trifle excised close to it. Above, it tapers to the filament, and is not excised or emarginate.

Mikuriya, Suruga (Hirase; types of *C. j. suruga* and *C. e. brachyptychia*). Hakone, Sagami (Hungerford; types of *C. oostoma*).

This species has been the subject of several notices by Dr. O. von Möllendorff and myself, but it has not hitherto been adequately illustrated. Figures are now supplied for comparison with the related forms *dactylopoma* and *goniapoma*. The above description and the figures are from the types of *C. japonica* var. *suruga*, which is undoubtedly specifically identical with *C. oostoma*.

*Clausilia oostoma* var. *dactylopoma* nov. Pl. XXVII, figs. 19, 20.

Specimens from Kashio, Awaji, are a little shorter, with 11 to  $11\frac{1}{2}$  whorls, and have the *lower palatal plica well developed*. They have the comparatively fine, even striation of the form from Mikuriya, Suruga.

Length 22-25.5, diam. 5.2 mm.

Clausilium (Pl. XXVII, figs. 19, 20) with the apex strongly projecting, finger-like, the palatal margin near it being *strongly excised and concave*; and it is *deeply excised on the palatal side of the filament*.

This form approaches var. *goniopoma*, but differs in the fine striation, and somewhat in the shape of the clausilium.

**Clausilia oostoma** var. **goniopoma** n. sp. Pl. XXVII, figs. 11, 12, 13, 14.

Shell somewhat fusiform, the upper half tapering, attenuated, lower half somewhat swollen; dull light-yellow. Sculpture of *rather strong and separated folds* or ribs, the upper whorls smoother, worn. Apex small. Whorls 11 to 11½, moderately convex, latter half of the last conspicuously compressed. Aperture subvertical, piriform, the peristome white, continuous and somewhat thickened. Superior lamella marginal, oblique, continuous with the spiral lamella, which penetrates to a point above the superior lamella. Inferior lamella forming a strong, subhorizontal fold, approaching the superior lamella; inside it ascends in a broad spiral, and penetrates deeper than the spiral lamella. The subcolumellar lamella emerges. The principal plica is short, rather weak and lateral. Palatal plicæ two, the upper of moderate size or small, the lower larger.

Length 21, diam. nearly 5 mm.

Length 19.8, diam. 4.5 mm.

Clausilium (Pl. XXVII, figs. 11, 12) very broad below, the apical end bent at a right angle to the rest of the plate, thickened, narrow and mucronate, excised and thin on the palatal side; above it is a little excised on the columellar side of the filament.

Wakayama, Kii. Types No. 83,286, A. N. S. P., from No. 926 of Mr. Hirase's collection.

In general external shape, as well as in the lamellæ, this form resembles *C. oostoma* Mlldf. (*suruga* Pils.), but it differs in the far coarser sculpture and in the peculiarly bent and attenuated distal end of the clausilium.

Whether the forms *oostoma*, *dactylopoma* and *goniopoma* are to be regarded as distinct species or as subspecies remains a subject for further investigation, as each is yet known from a single locality, and is constant in its characters, so far as may be judged by the material before me. The salient characteristics of the three forms may be succinctly tabulated thus:

Surface rather finely striate :	$\left\{ \begin{array}{l} oostoma \\ dactylopoma \end{array} \right.$	$\left\{ \begin{array}{l} \text{Lower palatal plica weak or wanting. Palatal side of the clausilium straight distally, hardly excised, columellar side not excised near the filament.} \\ \text{Lower palatal plica well developed. Palatal side of the clausilium deeply excised distally, the columellar side excised near the filament.} \end{array} \right.$
Surface coarsely plicate :		

The shape of the clausilium is shown on the plate. In *C. oostoma* it is not quite so strongly curved as in the other forms, there is only a slight trace of the excavation on the palatal side of the distal end, and there is no excision on the columellar side of the filament. In *dactylopoma* there is a deep excision on the palatal side of the distal end, which, however, passes gradually into the broadly dilated palatal margin. The latter is but slightly thickened. The columellar side is deeply emarginate or excised at the origin of the filament. In *goniopoma* the deep distal excision terminates somewhat abruptly at the end of a wide thickened rib which strengthens the rest of the palatal margin. The excision near the filament is slightly less deep than in *dactylopoma*.

The excavation on the palatal side of the distal end of the clausilium when retracted fits over the lower palatal plica in all of these forms.

#### Section EUPHÆDUSA Btg.

*Euphædusa* is one of the most sharply defined of the numerous sections into which Prof. Dr. Boettger divided the heterogeneous group *Phædusa*. At the time of the appearance of the classic *Clausilienstudien* but five Japanese species were known, placed by Boettger in two groups typified by Chinese species. The number of Japanese species has now been more than doubled, and requires the arrangement proposed in my *Catalogue*, p. 654. This arrangement was based upon the following characters:

#### I.—Superior lamella present.

a.—Lunella perfect, . . . . . Group of *C. jos.*

b.—Lunella incomplete or wanting, palatal plicæ present,  
Group of *C. shanghaiensis.*

c.—Lunella and palatal plicæ wanting,  
Group of *C. subgibbera.*

- II.—Superior lamella wanting, or represented by a slight thickening of the peristome only. No lunella; 2 palatal plicæ.  
*a.*—Aperture piriform, . . . *Group of C. hungerfordiana.*  
*b.*—Aperture oval, hardly narrower above than below,  
*Group of C. euholostoma.*

The groups are successively more aberrant in the order given above, this phylum having its acme in the section *Reinia*.

Two species, *C. subgibbera* and *C. expansilabris*, described by Boettger from Rein's collection, are not known to me by specimens, and their exact localities in Japan are unknown. All of the other species are represented in the collection of the Academy, and are described and figured in this paper and preceding ones of the series.

*Group of C. shanghaiensis.*

*Key to Species.*

- I.—*Superior lamella high*; inferior lamella forming a *conspicuous convex fold in a front view* of the aperture; subcolumellar lamella emerging; short upper and lower palatal plicæ, but no trace of a lunella. Shell *glossy, dark purplish-brown*. 11.5 by 3 mm. Hachijo Island, Izu, . . . *C. tryoni*.
- II.—*Superior lamella moderately developed*; inferior lamella forming a low, convex fold in a front view, *approaching close to the superior*; shell *rib-striate*.  
*a.*—Brown; length 13–14 mm., . . . . . *C. digonoptyx*.  
*a'*.—Greenish-corneous; palatal plicæ short, lunella inconspicuous, almost wanting; length 10 mm., . . . . . *C. comes*.
- III.—*Superior lamella small or reduced to a low cord*; inferior lamella showing in front as a low fold, *not converging strongly toward the superior lamella*; shell dull brownish, finely striate.  
*a.*—*Superior lamella small but distinct*; spiral lamella high; upper palatal plica long, connected in the middle with a J-shaped lunella, which is weak in the middle, and strengthened below into a nodule, . . . . . *C. tau*.  
*a'*.—*Superior and spiral lamellæ reduced to a low cord*; palatal plicæ short.  
*b.*—Length 13–16, diam. 3–3.5 mm.; upper and lower palatal plicæ weakly connected by a low, imperfect lunella, visible as a whitish streak externally. Kyushu, . . . . . *C. subaculus*.  
*b'*.—Length 13.5, diam. 2.7 mm.; small upper and lower palatal plicæ, but no lunella. Yesso, *C. rowlandi*.



*Clausilia subaculus* n. sp. Pl. XXVIII, 38, 39, 40.

*Clausilia aculus* Benson, Boettger, Jahrbücher d. deutschen malak. Ges., V, 1878, p. 49, Pl. 3, fig. 3a, b. Kobelt, Fauna moll. extramar. Jap., p. 71, Pl. 8, fig. 19. Not *C. aculus* Benson, cf. Boettger, Jahrbücher, VI, 1879, p. 108.

*Clausilia proba* A. Ad., Boettger, Jahrbücher, VI, 1879, p. 108. Not *C. proba* A. Ad., Ann. Mag. N. H. (4), I, 1868, p. 471.

Shell long-fusiform, the penultimate whorl widest, those above regularly tapering, the spire slender above, lateral outlines straight, apex rather acute; color varying from yellowish-brown to pale olive-brown. Surface glossy, distinctly and somewhat coarsely striate, the last whorl more strongly so. Whorls about 10, rather convex, the last shortly free in front. Aperture wide-piriform, the upper margin a little sinuate. Peristome white, somewhat thickened, expanded and narrowly reflexed. Superior lamella merely a low cord terminating in a small thickening of the peristome, continuous within with the spiral lamella, which penetrates nearly to the middle of the ventral side. Inferior lamella receding, becoming high within, only moderately approaching the superior lamella, and decidedly shorter inside than the spiral lamella. Subcolumellar lamella barely emerging. Principal plica chiefly dorsal, being visible in the throat and extending to but hardly past the middle of the right side. Upper palatal plica moderately long, oblique, connected near its lower end with an arcuate lamella, which is very low or almost interrupted in the middle, becomes distinct again below, where it is recurved in a short lower palatal plica.

Length 16, diam. 3.5 mm.

Length 13, diam. 3 mm.

Clausilium (Pl. XXVIII, figs. 41, 42) strongly curved, wide below, rounded and somewhat thickened at the apex, the margins converging somewhat upward, rather deeply excised on the columellar side of the filament.

Nagasaki, in western Kyūshū. Types No. 60,372, A. N. S. P., received from Mr. B. Schmacker.

Prof. Dr. Boettger has already pointed out the differences between this species and *C. tau*. The superior lamella in the former is lower, a mere cord; the striation is stronger, and the upper palatal plica smaller. The palatal structures do not shine white through the shell so conspicuously as in *C. tau*. Inside, the

spiral lamella is seen in *C. subaculus* to be much lower than in *C. tau*. This is well shown in the views of the interior from behind, fig. 39 (*subaculus*) and fig. 43 (*tau*). In both species the subcolumnellar lamella is noticeably dilated where it passes the lower palatal plica, shown in the same figures. *C. digonoptyx* is a more strongly striate shell, with the inferior lamella much more closely approaching the superior.

This species was collected at Nagasaki in numbers by Prof. Dr. J. J. Rein, and at first (1878) identified by Prof. Boettger as *C. aculus* of Benson, a species originally described from Chusan. Subsequently (1879) Boettger recognized that the Japanese form was distinct from Benson's Chinese species, but trusting to supposedly authentic specimens labeled *C. proba* A. Ad. in Dohrn's collection, he substituted this name for the Nagasaki species. This determination, however, cannot stand, being contradicted by the terms of A. Adams' diagnosis of *C. proba*. He describes that shell as  $5\frac{1}{2}$  lines (11 mm.) long, with eight whorls, "*lamella supera valida, compressa,*" whereas the Nagasaki species under discussion is larger, with about 10 whorls, and a *remarkably low, weak and inconspicuous superior lamella*. Moreover, the locality of *C. proba* is far removed from Nagasaki, being in Awa province, east of the entrance of the Bay of Yeddo. Whatever *C. proba* may prove to be, it is surely not closely related to *C. aculus*.

Under these circumstances it becomes necessary to rename the Nagasaki species; and in so doing I have considered it best to give a new description, in order that there may be in future no uncertainty about the exact form intended.

*Clausilia rowlandi* n. sp. Pl. XXVIII, figs. 28, 29, 30.

Shell fusiform-turrite, the spire slender, nearly straight-sided, tapering to a small apex; light-brown. Surface finely and rather sharply striate. Whorls 10, rather strongly convex, especially just below the suture, the last shortly free in front. Aperture *narrowly piriform*, the upper margin slightly sinuate at the position of the superior lamella, the well-marked sinus a little retracted. Peristome white, thickened, expanded and reflexed. Superior lamella merely a small cord, terminating in a rather wide thickening of the margin of the peristome, continuous inside with the spiral lamella, which penetrates nearly to the middle of the ventral side. Inferior lamella receding, becoming high within, approaching the superior lamella, shorter within than the spiral lamella.

Subcolumellar lamella immersed, visible in an oblique view in the aperture. Principal plica visible in the throat, extending past the middle of the right side. *Upper and lower palatal plicæ quite small*, no lunella between them.

Length 13.5, diam. 2.7 mm.

Clausilium wide below, somewhat thickened at the apex, but angular there, almost mucronate, by reason of an excavation of the palatal side near the apex. The margins converge somewhat upward, and it is excised on the columellar side of the filament.

Garukawa, 10 miles from Sapporo, Ishikari, island of Yesso; collected by Mr. Paul Rowland, and communicated to me by Mr. Addison Gulick.

Similar to *C. subaculus* in the low, cord-like superior lamella continuous with the spiral lamella, but conspicuously distinct by its narrowly pear-shaped aperture, more slender contour, the reduction of the palatal plicæ and the angular apex of the clausilium. *C. monelasmus*, of Ojima province, Yesso, is a smaller species with no superior lamella, there being only a marginal thickening of the peristome in its place.

The shape of the mouth readily distinguishes this from all Japanese *Euphaduse*. The clausilium is also characteristic, no other Japanese *Euphadusa* having it subangular at the apex. It is named for Mr. Paul Rowland, who found the specimens and sent them to Mr. Addison Gulick.

**Clausilia tau** Boettger. Pl. XXVIII, figs. 36, 37, 43, 44, 45.

Boettger, Clausilienstudien, p. 58, footnote (1877); Jahrb. d. d. malak. Ges., V, p. 46, Pl. 3, fig. 2. Kobelt, Fauna moll. extramar. Jap., p. 70, Pl. 8, fig. 18.

The shell is finely striate, becoming costulate-striate on the back of the last whorl, as in *C. subaculus*. The aperture is widely pyriform, the upper margin distinctly sinuate at the position of the superior lamella. The superior lamella is small, but decidedly higher than in *C. subaculus*. The principal plica is long, extending inward beyond the lunella. The upper palatal plica is quite long, united in the middle with the lunella, which is low or interrupted in the middle, and curves inward below, terminating in a nodular lower palatal plica. The whole structure, as seen from the inside, has been aptly compared by Boettger to the Greek letter  $\tau$ . The palatal folds show whitish on the outside.

Length  $12\frac{1}{2}$ - $15\frac{1}{2}$  mm., diam.  $3$ - $3\frac{1}{2}$  mm.

Kyoto (Rein, Hirase; type locality); Shirono, Buzen; Gojo and Nohara, Yamato; Takasaki, Kozuke (Y. Hirase); Yokohama and Tokyo (F. Stearns, purchased).

*Clausilia digonoptyx* Boettger. Pl. XXVIII, figs. 31, 32, 33, 34, 35.

Boettger, Clausilienstudien, p. 58, footnote (1877); Jahrb., V, p. 45, Pl. 3, fig. 1; Pl. 4, fig. a. Kobelt, Fauna, p. 69, Pl. 8, fig. 17.

A more glossy shell than *C. tau*, finely *rib-striate*, the superior lamella higher than in *C. tau*, the inferior *strongly converging toward it* in the throat. The upper palatal plica is shorter than in *C. tau*, and united with a very low lunella, interrupted in the middle, and curving inward below in a short lower palatal plica. The plicæ and lamella together form an arch or bow rather than a  $\tau$ -shaped figure. It does not attain quite the size of *C. tau*, but is larger than *C. comes*. The conspicuous approximation of the lamellæ and the rib-striation are its most striking features. The conspicuous striation unfortunately did not come out well in the reproduction of my figure 32.

The types were collected by Rein, exact locality unknown. Mr. Hirase has sent specimens from the following localities: Manabe, Hitachi; Takasaki, Kozuke; Yamagachi, Tajima; Nishigo, Uzen.

#### Section REINIA Kobelt.

*Clausilia variegata* var. *nakadai* nov.

Shell very much smaller than *variegata* or *nesiotica*, length 7, diam. 2 mm.; brownish, the upper whorls whitish or somewhat buff-streaked; whorls  $6\frac{1}{2}$ . Superior lamella short, widely separated from the spiral lamella, the other lamellæ as in var. *nesiotica*.

Hachijo-jima, Izu. Types No. 83,299, A. N. S. P., from No. 942 of Mr. Hirase's collection.

#### Section PSEUDONENIA Bttg.

So far as the Japanese species are concerned, it is difficult to see any important difference between *Pseudonenia* and *Euphadusa*. Each has a clausilium of the broad type, either rounded or somewhat acuminate at the apex, and the lamellæ and plicæ are of the same type in both sections. The Japanese forms referred to *Pseudonenia* I would therefore place under *Euphadusa*, but pending a general revision of the groups in question, the generally accepted arrangement is here retained.

**Clausilia sieboldi** Pfr.

*C. sieboldii* Pfr., Proc. Zool. Soc., 1848, p. 111; Monographia Helv., II, p. 165; Conchylien Cabinet, *Clausilia*, p. 100, Pl. 11, figs. 10, 11.

*C. sieboldi* Pfr., Monogr., VIII, p. 520. Kobelt, Fauna moll. extramar. Jap., p. 73, Pl. 9, fig. 1.

A species collected by Siebold, and described by Pfeiffer as corneous-brown, with 10 whorls, a deep, arcuate lunella, visible outside through the shell, and one moderate palatal plica. The type measures 18 mm. long, 4 wide in the middle.

Kobelt described and figured specimens taken by Dr. Rein at Amakusa, and between Hiugo and Bugo (Bungo?). He gives the color as "dunkel hornbraun." "Die Principalfalte ist klein, häufig gar nicht zu erkennen, die Mondfalte ist klein oder breit, fast gerade, von der Principalfalte getrennt, und schicht unten einen Ast nach hinten; die Gaumenfalten fehlen oder es ist eine ganz kleine vorhanden, welche mit der Mondfalte zusammenhängt."

The relation of this form to the next is a matter for further investigation, with more material than is at present available.

**Clausilia sieboldi** var. **diptyx** nov. Pl. XXVIII, figs. 19, 20, 21.

Shell fusiform or turreted, the greatest width being either near the middle or at the last whorl; the spire rapidly tapering above to a rather small, acute apex, the outlines of the terminal portion straight. Dark purple-brown, fading to pale or yellowish-brown above. Surface glossy, sculptured with strong, close rib-striae, narrower than their intervals. Whorls  $9\frac{1}{2}$ , convex, the last somewhat flattened laterally, convex beneath, showing a pale or yellowish curved streak in the position of the lunella. Aperture ovate, dark within; peristome white, thickened within, rather widely reflexed, continuous, a little excavated at the sinulus. Superior lamella rather small, thin, and *short*, not reaching to the lip-edge; widely separated from the spiral lamella, which is a half whorl long, penetrating to the middle of the ventral side. Inferior lamella subhorizontal, thin, not extending upon the expanded lip, ascending in a wide spiral within, penetrating as deeply as the superior lamella. Subcolumellar lamella very deeply immersed. Principal plica about a third of a whorl long, latero-dorsal. Upper and lower palatal plicae rather short, subparallel, the upper one curved; they are connected by a very low lunella, scarcely notice-

able, except for the absence of dark pigment in the shell wall at its position.

Length 19, diam. 4-4.3 mm.

Length 18, diam. 4.3 mm.

Length 16.3, diam. 4 mm.

Clausilium (Pl. XXVIII, figs. 22, 23) rather wide below, strongly curved, the apex somewhat acuminate, a little thickened; dilated on the palatal side; deeply excised on the columellar side of the filament.

Nippon or Hondo Island: Toyonishikami, Nagato, type locality. Shikoku Island: Kashiwashima, Tosa. Kyushu Island: Yatsushiro, prov. Higo, and Sasebo, Hizen (Y. Hirase).

This widely distributed form apparently differs from *C. sieboldi* as defined by Pfeiffer and Kobelt by its dark color, *well developed principal plica, two distinct palatal plicae*, and the very low lunella. It differs from *C. neniopsis* by the less approaching superior and inferior lamellae, the former widely separated from the spiral lamella, the very deeply immersed subcolumellar lamella, and other characters.

The specimens figured (No. 79,137, A. N. S. P.) are from the type locality in Nagato province, southwestern Nippon. Those sent by Mr. Hirase from Kashiwashima, Tosa, and Sasebo, Hizen, are similar. Specimens from Yatsushiro, Higo, are quite thin, somewhat smaller, with 9 whorls and the spiral lamella approaches near the superior lamella. Length 15-16½, diam. 4 mm.

*Clausilia neniopsis* n. sp. Pl. XXVIII, figs. 24, 25, 26, 27.

Shell fusiform, the penultimate whorl widest, the spire much attenuated above, the apex minute, first two whorls of about the same diameter, weakly convex, following whorls convex and rather rapidly increasing, the last two whorls forming more than half the total length, last whorl compressed laterally. The last two whorls are blackish purple-brown or dull red, spire reddish, the earlier two whorls nearly white. Surface somewhat glossy, sharply and closely rib-striate. Aperture ovate-piriform, dark within. Peristome continuous and free, rather broadly reflexed, somewhat thickened, white on both face and reverse. Superior lamella marginal, vertical, thin, continuous with the spiral lamella which penetrates past the ventral side. Inferior lamella prominent,

strongly spiral, *approaching close to the superior lamella*, and penetrating as far. Subcolumellar lamella either barely visible from in front or wholly immersed. Principal plicæ rather small, lateral. Palatal plicæ two, lateral, the upper curved a little further inward than the straight, oblique lower one. No lunella.

Clausilium (Pl. XXVIII, figs. 26, 27) very strongly curved, almost in a semicircle, wide, broadly rounded below, tapering above, not excised at the filament.

Length 18, diam. 4 mm.; length of aperture 4.6 mm.

Oshima, Osumi. Types No. 83,305, A. N. S. P., from No. 932 of Mr. Hirase's collection.

This species is somewhat more slender and graceful than *C. sieboldi* var. *diptyx* of Kyushu, with more attenuated early whorls; but it differs chiefly in the much closer approach of the inferior to the superior lamellæ in the aperture, the continuity of the superior with the spiral lamella, and the deeper penetration of both spiral and inferior lamellæ. As in *C. sieboldi*, the position of the wanting lunella is indicated by a pale area in the shell. The clausilium differs, being broadly rounded at the apex in *C. neniopsis*, and without excision near the filament, while in *C. sieboldi* var. *diptyx* the apex is angular and there is an abrupt excision on the palatal side of the filament.

The converging lamellæ in the mouth remind one of *Nenia* or the allied genus *Garnieria*.

ADDITIONS TO AND CORRECTIONS OF THE CATALOGUE OF  
JAPANESE CLAUSILIIDÆ.<sup>2</sup>

Section MEGALOPHLEDUSA Bttg.

*C. DUCALIS* var. *DECAPITATA* Pils. Kashima, Harima.

Section HEMPHLEDUSA Bttg.

*C. INTERLAMELLARIS* v. Mart. (*Catal.*, p. 648). The locality Kirishima, Kyushu, is given by Boettger, *Syst. Verz.*, p. 57.

*C. PLATYDERA* v. Mart. A var. *elongata* from Kobe is mentioned by Bttg., *Syst. Verz.*, p. 57.

*C. STRICTALUNA* var. *EMERSA* Ancey. Hitozashi.

*C. AGNA* Pils. Yakushima, Osumi.

<sup>2</sup> See these *Proceedings* for 1901, pp. 647-653.

- C. CALOPTYX Pils. Yakushima, Osumi.  
 C. PACHYSPIRA Pils. Miyai, Kii.  
 C. KUROZUENSIS Pils. Kurozu, Kii.

## Section TYRANNOPHÆDUSA Pils.

C. AURANTIACA var. PLICILABRIS A. Ad., Pils. Kashima, an island near Tanabe, Kii. (Syn.: *C. a.* var. *hypoptychia* Pils., *Catal.*, p. 652; *C. plicilabris* A. Ad.)

C. BILABRATA Sm. Forms *minor* and *integra* are listed by Dr. Boettger from Kyushu. A synonym is *C. bilabiata* Sowerby, *Conch. Icon.*, XX, Pl. 14, fig. 135.

## Section STEREOPHÆDUSA Btg.

C. PLAGIOPTYX Pils. Götö, Hizen. The locality "Götö, Uzen," is to be deleted from the range given to *C. brevior*, p. 653.

C. OOSTOMA var. GONIOPOMA Pils. Wakayama, Kii.

C. OOSTOMA var. DACTYLOPOMA Pils. Kashio, Awaji.

C. STEREOOMA var. HEXAPTYX Pils. Yakushima, Osumi.

C. DÆMONORUM Pils. Kikaiga-shima, Osumi.

## Section PSEUDONENIA Btg.

C. SIEBOLDI var. DIPTYX Pils. Southwestern Nippon, Shikoku and Kyushu.

C. NENIOPSIS Pils. Oshima, Osumi.

## Section EUPHÆDUSA Btg.

C. SUBACULUS Pils. Nagasaki. This name replaces that of *C. aculus* Bens., *Catal.*, p. 654, for the Kyushu form.

C. ROWLANDI Pils. Garukawa, near Sapporo, Yesso.

## Section REINIA Kobelt.

C. VARIEGATA var. NAKADAI Pils. Hachijo-jima, Izu.

*Species incertæ sedis.*

C. LEWISII Ancey. Japan.



## EXPLANATION OF PLATES XXVII AND XXVIII.

[NOTE.—All figures of corresponding parts are drawn to the same scale.]

- PLATE XXVII, Figs. 1-3.—*Clausilia kurozuensis*. Kurozu, Kii.  
Fig. 4.—Diagram of palatal armature of another specimen.  
Figs. 5-7.—*Clausilia pachyspira*. Miyai, Kii.  
Figs. 8, 9.—*Clausilia plagiptyx*. Gōtō Hizen.  
Fig. 10.—*Clausilia plagiptyx*. Palatal armature of another specimen.  
Figs. 11-14.—*Clausilia oostoma* var. *goniopoma*. Wakayama, Kii.  
Figs. 15-18.—*Clausilia oostoma* Mildif. (Type of *C. japonica* var. *suruga* Pils.) Mikuriya, Suruga.  
Figs. 19, 20.—*Clausilia oostoma* var. *dactylopoma*. Kashio, Awaji.
- PLATE XXVIII, Figs. 19-23.—*Clausilia sieboldi* var. *diptyx*. Toyonishikami, Nagato.  
Figs. 24-27.—*Clausilia neniopsis*. Oshima, Osumi.  
Figs. 28-30.—*Clausilia rowlandi*. Garukawa, near Sapporo, Yesso.  
Figs. 31-35.—*Clausilia digonoptyx*. Manabe, Hitachi.  
Figs. 36, 37.—*Clausilia tau*. Clausilium of a specimen from Kyoto.  
Figs. 38-42.—*Clausilia subaculus*. Nagasaki.  
Figs. 43-45.—*Clausilia tau*. Nohara, Yamato.